

T8631A,R Communicating Chronotherm III Thermostats

Application

T8631A,R can be connected to Honeywell's TotalHome system for external access and control. TotalHome system devices communicate using HBus, a Honeywell communications protocol.

These thermostats, powered directly from the control transformer, provide energy saving control for a 24 Vac conventional heating/cooling or multistage heat pump heating/cooling system as indicated in Table 1.

As long as AC power is continuously available to the transformer, the thermostat will be compatible with most control systems.

The T8631A,R models include a SYSTEM LED near the top of the thermostat face. The SYSTEM LED lights when the thermostat is signaling for heating or cooling.

T8631R includes AUX. HT. and EM. HT LEDs near the bottom center of the subbase. The AUX. HT. LED lights whenever the thermostat is calling for operation of the backup or auxiliary heater. Backup (auxiliary) heat is more expensive to operate than the heat pump and typically is used only when the heat pump is unable to handle the load. The EM. HT. LED lights whenever the thermostat system switch is in the EM. HT. position. The EM.HT. LED may also light on some systems if the heat pump is malfunctioning. The system switch needs to be moved to EM.HT. on these heat pumps.

Heat and cool anticipation is fixed in both models; no adjustment is necessary. T8631A has adjustable cycle rate for heating; T8631R cycle rate is adjustable only for auxiliary heat.

TABLE I—THERMOSTAT MODELS.

Thermostat	Stages		Switching		Program
	Heat	Cool	System	Fan	
T8631A	1	1	HEAT-OFF-COOL	ON-AUTO	5-1-1
T8631R	2	1	EM. HT.-HEAT-OFF-COOL	ON-AUTO	5-1-1

Installation

WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.
5. Allow thermostat to warm to room temperature before operating.

IMPORTANT: *After wiring is complete, push excess wire back into the hole, and plug hole with nonhardening caulk, putty or insulation to prevent drafts from affecting thermostat operation.*

LOCATION

Install thermostat and subbase about 5 ft [1.5 m] above the floor in an area with good air circulation at room temperature.

- Do not install the thermostat where it may be affected by:
 - drafts or dead spots behind doors, in corners or under cabinets.
 - hot or cold air from ducts.
 - radiant heat from sun or appliances.
 - concealed pipes and chimneys.

— unheated (uncooled) areas behind the thermostat, such as an outside wall.

WIRING TO HEATING/COOLING SYSTEM

The T8631 requires connection to both sides of the heating transformer secondary for power.

If Replacing An Existing Thermostat

Turn off power to thermostat at furnace or heat pump. A two-transformer system may require turning off two switches or disconnects. Remove any existing wallplate or subbase from wall. Label each wire with, or write down, the letter or number on the wiring terminal as the wire is removed, to avoid miswiring later.

If New Installation

Run cable to a hole at the selected wall location, and pull about 3 in. [76 mm.] of wire through the opening. Color-coded, 18-gauge thermostat cable with one conductor for each wiring terminal, excluding *H* terminals, is recommended. Good service practice recommends selecting cable with one or two more conductors than the immediate application requires.

WIRING TO TOTALHOME SYSTEM

The HBus connection requires an unshielded cable with 3 twisted pairs of #22 AWG solid wire. Use Belden #8742, Alpha #1304 or equivalent wire. Route this cable with the thermostat cable to the utility room. Do not connect the HBus cable to the T8631 until the other TotalHome devices are connected.

MOUNTING SUBBASE

The subbase does not require leveling for proper operation, but only for appearance.

Remove thermostat from subbase. See Fig. 1.

The subbase mounts directly onto the wall with the screws and anchors included in the package. Use the subbase as a template, and with a pencil, mark the two mounting screw positions. See Fig. 2. If drywall construction, plastic anchors must be used; select 3/16 in. bit to drill holes for anchors. Gently tap anchors into holes until they are flush with the wall surface. Thread wires through the center opening of the subbase. Then, mount the subbase by using two screws provided. Gently tighten screws, level top surface of subbase and then securely tighten screws.

WIRING

All wiring must comply with local electrical codes and ordinances.

Disconnect power before wiring to prevent electrical shock or equipment damage.

The shape of the terminal barrier permits insertion of straight or conventional wraparound wiring connections. Either method is acceptable.

Refer to Figs. 3-5 for typical hookups of subbase and thermostat.

NOTE: Keep all wiring restricted to ribbed area surrounding terminals to assure thermostat/subbase contact. See Fig. 6.

Fig. 1—Removing thermostat from subbase.

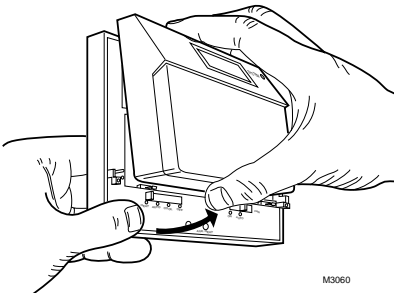


Fig. 2—Mounting subbase on wall.

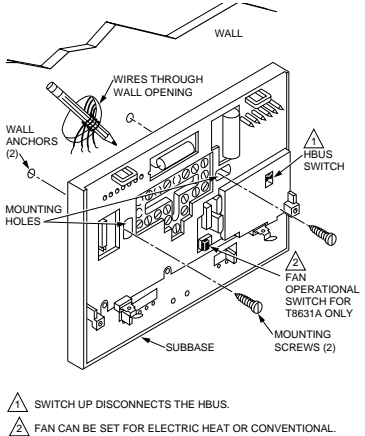
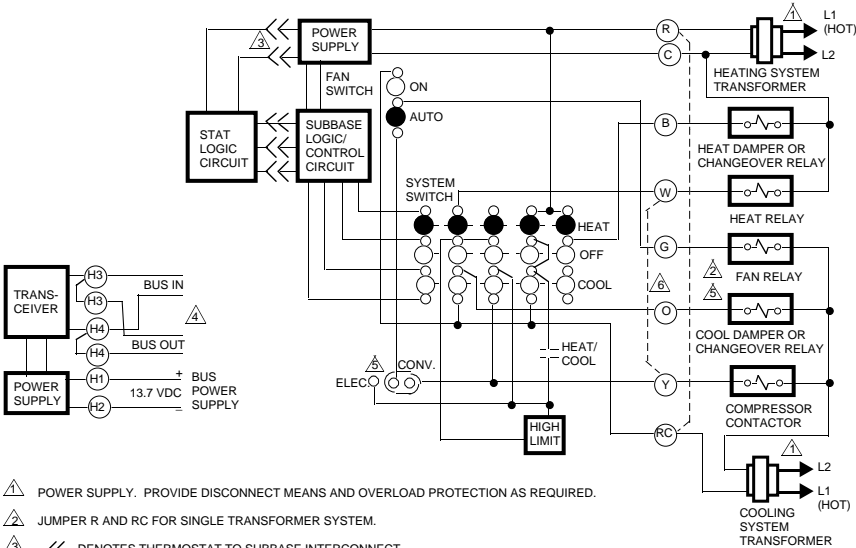


Fig. 3—T8631A 1-stage heat/1-stage cool thermostat with HEAT-OFF-COOL system and ON-AUTO fan switching.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 JUMPER R AND RC FOR SINGLE TRANSFORMER SYSTEM.
- 3 ———— DENOTES THERMOSTAT TO SUBBASE INTERCONNECT.
- 4 DO NOT CONNECT H BUS WIRES TO THERMOSTAT UNTIL OTHER TotalHome DEVICES ARE CONNECTED.
- 5 FAN OPERATION SWITCH (4A) IN ELEC. POSITION, USE ONE SYSTEM TRANSFORMER AND JUMPER R TO RC.
- 6 FOR SINGLE STAGE HEAT PUMP APPLICATIONS, JUMPER W TO Y FOR SINGLE COMPRESSOR CONTACTOR OPERATION.

Fig. 4—T8631A 1-stage oil heat/1-stage cool. Oil Primary has its own transformer.

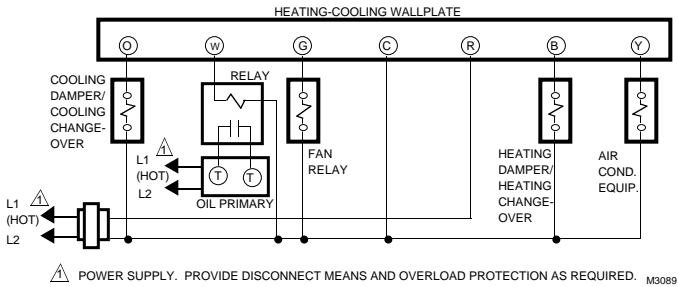


Fig. 5—T8631R 2-stage heat/1-stage cool thermostat with EM. HT.-HEAT-OFF-COOL system and ON-AUTO fan switching.

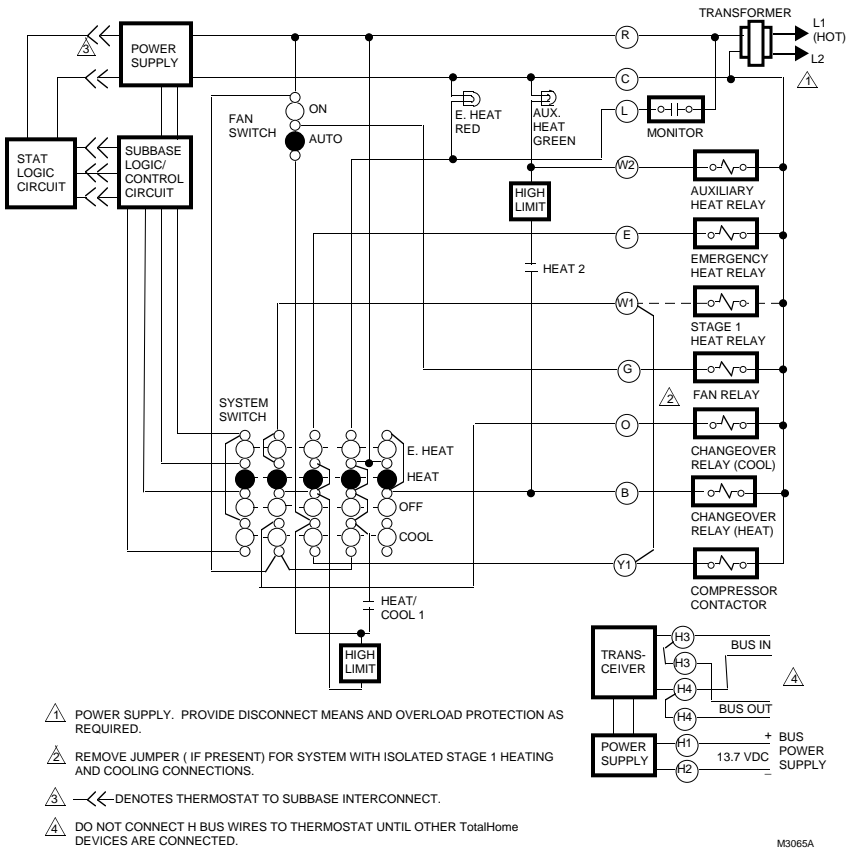


Fig. 6—Keep wiring restricted to ribbed area surrounding terminals.

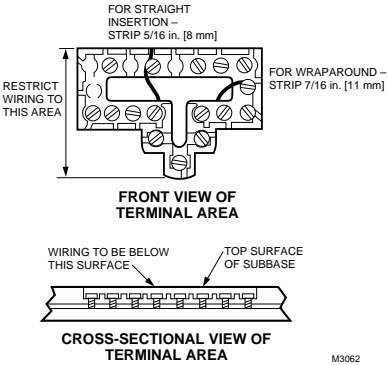


Fig. 7—T8631R cycle rate adjustment.

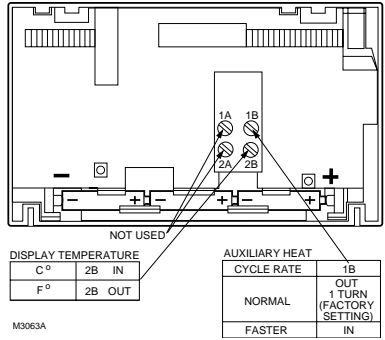
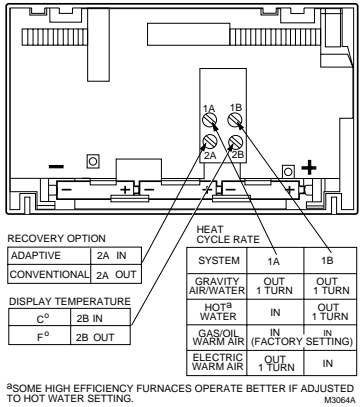


Fig. 8—T8631A cycle rate adjustment.



CYCLE RATE ADJUSTMENT

NOTE: MOST APPLICATIONS WILL NOT REQUIRE A CHANGE IN CYCLE RATE.

The room air temperature will normally vary slightly from the comfort temperature setting with the cycling of the heat pump, auxiliary heater, furnace or air conditioner. The cycle rate of the T8631R Thermostat is factory-set for heat pumps. The heat pump compressor cycle rate can not be adjusted. The auxiliary heat cycle rate can be adjusted by turning the cycle rate adjustment screw located on the back of the thermostat. See Fig. 7.

T8631A has a factory-set cycle rate of six cycles per hour in heating and three cycles per hour in cooling. For high efficiency furnaces, it can be necessary to change the cycle rate to the hot water setting. Cooling cycle rate is not adjustable, but heating can be adjusted by turning one or both 1A and 1B screws on the back of the thermostat. See Fig. 8 for adjustments. The screw should only be backed out about one-half turn, or be turned in until tight.

ADAPTIVE INTELLIGENT RECOVERY™/CONVENTIONAL RECOVERY CONVERSION

The T8631A and T8631R are factory-set for Adaptive Intelligent Recovery™, but the T8631A can be converted to Conventional Recovery by using the screw 2A on the back of the thermostat as indicated in Fig. 8.

With the Adaptive Intelligent Recovery setting, the room will reach the comfort temperature at the exact time programmed into the thermostat. The control temperature will increase gradually and turn the equipment on and off several times to reach the comfort temperature slowly and on time.

With Conventional Recovery, the start time should be programmed to be earlier than the desired comfort time. It may require some trial and error to arrive at the best starting time. A ☐ will appear on the display when using Conventional Recovery.

TEMPERATURE CONVERSION

The display readout can be converted between °C and °F using screw 2B. See Figs. 7 and 8.

HBUS SWITCH

The subbase has a switch that you can move to disconnect the thermostat from the external control device. See Fig. 2.

INSTALLING BATTERIES

Three AAA alkaline batteries are provided as backup to prevent program loss in event of power outage. Batteries are included with thermostat. Install batteries in back of thermostat. See Fig. 9.

Without battery backup, the program will remain about 20 seconds in event of power loss.

Fig. 9—Battery placement.

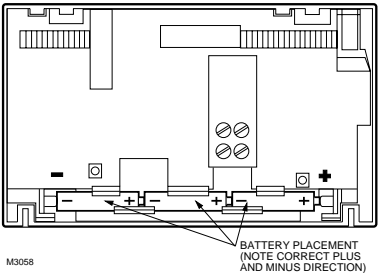
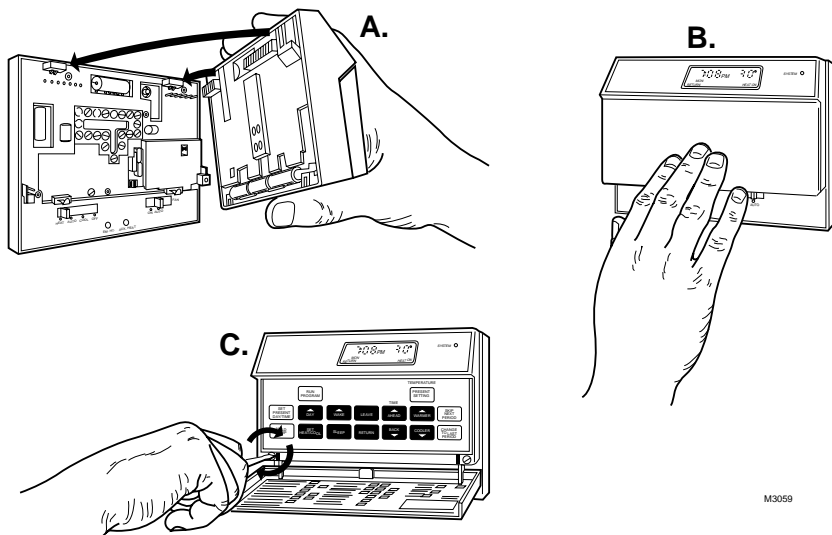


Fig. 10—Mounting the thermostat on subbase.



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When the batteries are low, the display will flash REPL BAT. REPL BAT indication will disappear when thermostat is mounted back on the powered subbase with fresh batteries. This may take up to 15 minutes to occur.

If batteries are completely dead, the display will go blank when the thermostat is removed from subbase.

MOUNTING THE THERMOSTAT


With system switch set to OFF, hang the thermostat on the tabs at the top of the subbase. See Fig. 10A. Swing down and press on lower edge until thermostat snaps into place. See Fig. 10B. Open cover and tighten the captive mounting screws. See Fig. 10C.

SETTING DAY AND TIME

NOTE: Thermostat must be mounted on powered subbase to program.

Restore 24V power to the thermostat. When power is applied to the thermostat, the display will read 1:00 PM and 32° for a minute or less, followed by 1:00 PM and room temperature. It will go off for a few seconds, then begin to flash on and off. Set present day and time.

Press  .

Press  to set the current day. Each press of

the DAY key advances the display one day.

Press TIME  or  to set the current time.

If the display will not come on:

- check mounting of thermostat to subbase. If loose or misaligned, remove thermostat and reinstall on the subbase, making sure it is firmly attached.
- check to see that system power is on.
- check to see that voltage between R and C is 20 to 30 Vac.

Checkout



CAUTION

During cold weather, some heat pumps will require that crankcase heater be energized several hours before operating heat pump. Refer to manufacturer's recommendations.

HEATING

Move the system switch to HEAT and the fan switch to AUTO. Press WARMER key until the setting is about 10° F [6° C] above room temperature. Heating should start and the fan should run (there may be a delay of 5-10 minutes before heat turns on). Press COOLER key until the setting is about 10° F [6° C] below room temperature. The heating equipment and fan should shut off. The fan will run a short time after equipment shuts off with T8631A unless fan operation switch set for electric.

COOLING



CAUTION

Do not operate cooling if outdoor temperature is below 50° F [10° C]. Refer to manufacturer's recommendations.

NOTE: When cooling setting is changed, thermostat can wait up to five minutes before turning on the cooling equipment. This delay is to protect the compressor.

Move the system switch to COOL and the fan switch to AUTO. Press COOLER key until the setting is about 10° F [6° C] below room temperature. The cooling equipment and fan should start. Press WARMER key until the setting is about 10° F [6° C] above room temperature. The cooling equipment and fan should stop.

FAN

Move the system switch to OFF, and the fan switch to ON. The fan should run continuously. When the fan switch is in the AUTO position, fan cycles with the heating or cooling system.

EXTERNAL ACCESS AND CONTROL

A triangle △ symbol is displayed on the lower right corner of the LCD when the T8631 setting has been adjusted through the TotalHome system. See Fig. 11.

INSTALLER SELF-TEST (OPTIONAL)

NOTE: Thermostat must have AC power to perform self-test.

Perform the following test as a check of all thermostat functions. *If thermostat does not respond as indicated, thermostat must be replaced.*

- 1. Press AHEAD and BACK keys at the same time. While holding keys down, all segments of the display should be on. See Fig. 11.
- 2. Set system switch to OFF. Press AHEAD and BACK and PRESENT SETTING keys at the same time to enter self-test.

Fig. 11—All segments on display.



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3. Press each key as listed below, and look for responses listed as key is held down and released.

Press This Key	Look For This Response	
	Key Down	Key Released
PRESENT SETTING	15	see note ^a following
SKIP NEXT PERIOD	07	blank
CHANGE TO LAST PERIOD	03	blank
COOLER	02	blank
WARMER	06	serial number transmitted on HBus
BACK	04	blank
AHEAD	05	blank
RETURN	00	blank
LEAVE	01	control micro-processor mask number and revision number
SLEEP	08	blank
WAKE	12	see note ^b following
SET HEAT/COOL	09	blank
DAY	13	interface micro-processor mask number and revision number
HOLD TEMP	10	blank
SET PRESENT DAY/TIME	14	see note ^c following
RUN PROGRAM	11	normal operating display

NOTES:

^a If the system switch is in COOL, the following sequence will occur:



CAUTION

Do NOT operate cooling if outdoor temperature is below 50° F [10° C]. Refer to manufacturer's recommendations.

First press—cooling system and SYSTEM LED on.
Second press—cooling system and SYSTEM LED off.

^b A four-digit code number will appear when the key is released. The four digits of the code represent the following options:

First Digit	T8631A CPH	T8631R CPH
0	1	3
2	3	3
4	9	6
6	6	6

Second Digit	Model	Degrees	Recovery Type
0	T8631R	F	A.I.R. ^a
1	T8631R	C	A.I.R. ^a
2	T8631A	F	Conventional
3	T8631A	C	Conventional
4	T8631R	F	A.I.R. ^a
5	T8631R	C	A.I.R. ^a
6	T8631A	F	A.I.R. ^a
7	T8631A	C	A.I.R. ^a

^a Adaptive Intelligent Recovery™

Third Digit	System Switch Position
0	OFF
1	COOL
2	HEAT
4	EM.HT.

^c If the system switch is in HEAT, the following sequence will occur:

Fourth Digit: Not used.



CAUTION

Do NOT operate heating until heat pump warmup procedure is followed. Refer to manufacturer's recommendations.

T8631A:

First press—1st stage heating and SYSTEM LED on.
Second press—heating and SYSTEM LED off.

T8631R:

First press—1st stage heating and SYSTEM LED on.
Second press—2nd stage heating also on.
Third press—2nd stage heating off.
Fourth press—1st stage heating and SYSTEM LED off.
(If system switch is in EM. HT., operation is as above, except 1st stage heating is locked out.)

REFER TO OWNER'S MANUAL FOR PROGRAMMING INSTRUCTIONS AND HOMEOWNER TROUBLESHOOTING.

Honeywell

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